CALIFORNIA
DEPARTMENT OF TRANSPORTATION

manual change transmittal

NO.

TITLE PROJECT DEVELOPMENT HIGHWAY DESIGN MANUAL 5th Edition - CHANGE 4	APPROVED BY ROBERT L. BUCKLEY	Date Issued: May 1, 2001 Page 1 of 2
SUBJECT AREA Chapter 800 - HIGHWAY DRAINAGE DESIGN	ISSUING UNIT DESIGN PROGRAM	
SUPERCEDES CHAPTER 800, 5TH EDITION, JULY 1995	DISTRIBUTION ALL MANUAL HOLDERS	

Attached are new Highway Design Manual (HDM) pages for various Indexes, Figures and Tables in Chapter 800 - Highway Drainage Design. This revision contains complete replacement for all portions of Chapter 800 except for Chapter 880, and also includes revisions to the Table of Contents, Table of Figures and the Index.

Major revisions within Chapter 800 have been made to; provide guidance on drainage design on Time of Concentration (Tc) and Travel Time (Tt) to bring the HDM more into line with FHWA's HDS #2, AASHTO, TR-55 and other publications; include a Summary of Methods for Estimating Design Discharge (Table 819.5A) to outline associated assumptions and data needs for various hydrologic methods; completely revise discussion on Floodplain Encroachments; provide additional guidance for: Outlet Design, Downdrain Anchorage, Pipe Anchorage, Bulking, Hydroplaning Selected Computer Programs, Spiral Rib Pipe and Grated Line Drains.

The most significant revisions are summarized below:

Topic 804 - Floodplain Encroachments
New and expanded discussion to address Title 23, CFR, Part 650 - policies and procedures for the location and hydraulic design of highway encroachments on floodplains. New discussion on National Flood Insurance Program and coordination with the Local Community and FEMA. New Figure 804.7A - Location Hydraulic Study.

Topic 805 - Preliminary Plans
New guidelines on the preliminary plan review and approval process by FHWA.

Topic 807 – Selected References
Various edits.

Topic 808 and Index 819.6, 825.3, 831.5 and 864.4(3) – Selected Computer Programs
Presents a software vs. capabilities matrix (Table 808.1) for hydrologic/hydraulic software packages that are approved for use by the Department. New text in various indexes for CAiCE, WMS, HEC-RAS and FESWMS-2DH software.

Index 813.8 – Debris
New text on bulking factors as a consideration in determining design discharges for facilities with watersheds that are located within mountainous regions subject to fire and subsequent soil erosion, or in arid regions when the facility is in the vicinity of alluvial fans.

Index 814.5 Tides and Waves
New text.

Index 816.6 - Time of Concentration (Tc) and Travel Time (Tt)
New and expanded discussion to describe Time of Concentration as the cumulative sum of three travel times, including: Sheet flow, Shallow concentrated flow and Channel flow.

Table 819.5A - Summary of Methods for Estimating Design Discharge
New table to outline associated assumptions and data needs for various hydrologic methods.

Indexes 823.1, 824.1, 824.2 and 825.2 – Cross Drainage
New text

Index 827.2 - Embankment Protection
New guidance, references and text on outlet design at culverts.

Index 829.5 - Pipe Anchorage
New text

Index 831.4(5) and 833.2 – Hydroplaning, Grade, Cross Slope and Superelevation
New text to describe considerations to prevent hydroplaning.

Index 834.4(5) – Downdrain Anchorage
New text

Figure 831.1, Index 837.2 (2) 837.2 (6) – Storm Drain Inlet Types
Guidance use of Grated Inlets, use of GDO Drop Inlet and Grated Line Drains as inlet alternative to slotted pipe.

Index 838.5 (2) - Junction Structures
New text

Index 839.4 – Trash and Debris Considerations
New text on Trash and Debris Considerations for storm drain systems leading to pumping stations.

Table 854.1 - Guide for the Protection of Reinforced and Unreinforced Concrete against Acid and Sulfate Exposure Conditions.
Replaces Tables 854.1A and 854.1B. Follows ESC Corrosion Technology recommendations as transmitted to Districts via memorandum dated May 26, 1998.

Index 854.3 and Table 854.3A – Corrugated Steel Pipe, Steel Spiral Rib Pipe and Pipe Arches
New guidance on use of Steel Spiral Rib Pipe, Composite Steel Spiral Rib Pipe, strength requirements, abrasion on metal pipe and added service life using protective coatings and/or extra metal thickness.

Figure 854.3 (C) – Chart for Estimating Years to Perforation of Steel Culverts
New Figure which provides revised breakdown of abrasive velocity conditions and adds new coatings.

Index 854.4 Corrugated Aluminum Pipe, Aluminum Spiral Rib Pipe and Pipe Arches
New guidance on use of Aluminum Spiral Rib Pipe and strength requirements

Index 854.5 (2) – Composite Steel Spiral Rib Pipe
New text to provide usage guidance on this recently approved product.

Tables 854.3F, G & H, and Tables 854.4D & E
New Tables for Steel Spiral Rib Pipe and Aluminum Spiral Rib Pipe.

Index 854.7 (1) - Box Culverts
New text.

Chapter 890 – STORMWATER MANAGEMENT
Edited or old text removed in Topics 891, 892 and old Table 892.3 removed.

The attached sheets are effective May 1, 2001, and shall be applied to on-going projects in accordance with the policy and instructions contained in HDM Index 82.5 – Effective Date for Implementing Revisions to Design Standards. Please remove superseded sheets and insert the revised sheets at or before the effective date.

Attachment